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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/642,883	08/22/2000	Masato Koike	001035	8966

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Armstrong Westerman & Hattori
McLeland & Naughton
Suite 1000
1725 K Street NW
Washington, DC 20006

EXAMINER
CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 10/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/642,883	Applicant(s) KOIKE ET AL.	
	Examiner Audrey Y. Chang	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 28, 2002 has been entered.

2. This Office Action is also in response to applicant's amendment filed on July 29, 2002, which has been entered as paper number 12.

3. By this amendment, the applicant has amended claims 1-15.

4. Claims 1-15 remain pending in this application.

5. The rejections to claims 1-15 under 35 USC 112, first and second paragraphs, set forth in the previous Office Action dated March 29, 2002 ***are withdrawn*** in response to applicant's amendment.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this

application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. **Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by the patent issued to Ishikawa (PN. 6,316,072).**

Ishikawa teaches a *rotatable optical disk* (10) having a *diffraction grating structure*, (being a plane grating as shown in Figures 4-6), that is comprised of a *plurality of grooves* formed on the surface of the grating such that the grooves have either blaze structure (Figure 6C) or rectangular structure (Figure 4), wherein it is implicitly true that the *profile* of the groove at radial area is dependent on the *azimuthal* position of the area with respect to the rotational axis, (please see Figures 4-6C). This reference has anticipated the claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claims 2-5 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the patent issued to Ishikawa.**

The rotatable plane diffraction grating taught by Ishikawa as described for claim 1 above has met all the limitations of the claims. Ishikawa teaches that the diffraction grating (2) has *blaze* grooves as shown in Figure 6C with a *blaze angle*. This reference however does teach *explicitly* about the diffraction properties defined by the claimed equations in relating to the angle of incident light, angle of diffraction light, the wavelength and the thickness of the grooves. However the claimed equations are simply the

standard equations for describing the *diffraction phenomenon* of a diffraction blaze grating, they therefore can be deducted based on standard knowledge of the diffraction theory by one skilled in the art.

10. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Ishikawa.

Ishikawa teaches a *rotatable* optical disk (10) having a *diffraction grating structure*, (being a plane grating as shown in Figures 4-6), that is comprised of a plurality of grooves formed on the surface of the diffraction grating such that the grooves has either blaze structure (Figure 6C) or rectangular structure (Figure 4), wherein it is implicitly true that the *profile* of the groove at *radial area* is dependent on the *azimuthal position* of the area with respect to the rotational axis, (please see Figures 4-6C). Ishikawa teaches that the incident light is shined at a radial area of the diffraction grating and the disk having the diffraction grating is rotatable presumable by any standard mechanism. However this reference does not teach explicitly that the incident light is a converging beam. But such modification is considered to be obvious matter of design choice to one skilled in the art for the purpose of allowing the rotary disc suitable for different type of incident light.

With regard to claims 7-10, Ishikawa teaches that the diffraction grating (2) has blaze grooves as shown in Figure 6C with a blaze angle. This reference however does teach *explicitly* about the diffraction properties in terms of the cited equations in relating to the angle of incident light, angle of diffraction light, the wavelength and the thickness of the grooves. However the claimed equations are simply the *standard* equations for describing the diffraction phenomenon of a diffraction blaze grating, they therefore can be deducted based on standard knowledge of the diffraction theory by one skilled in the art.

11. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Ishikawa in view of the patent issued to Ohkura et al (PN. 5,238,785).

Ishikawa teaches a *rotatable optical disk* (10) having a diffraction grating structure, (being a plane grating as shown in Figures 4-6), that is comprised of a plurality of grooves formed on the surface of the diffraction grating, such that the grooves has either blaze structure (Figure 6C) or rectangular structure (Figure 4), wherein it is implicitly true that the profile of the groove at radial area is dependent on the azimuthal position of the area with respect to the rotational axis, (please see Figures 4-6C).

This reference has met all the limitations of the claims with the exception it does not teach explicitly that the diffraction grating is formed by the method steps claimed. Ohkura et al in the same field of endeavor teaches a method for the manufacture of a diffraction grating wherein the method comprises the step of coating a photo-resist layer (42) on a substrate (31), the step of covering the resist partially with a semi-transparent mask (43), serves as the sector mask, the step of exposing the photo-resist layer and developing the layer to form a mask with intended diffraction grating pattern (45a) and the step of etching the substrate to form the diffraction grating pattern on the substrate, (please see Figures 3(a) to 3(e) and column 6). Ohkura et al teaches that the grating forming area is restricted by the semi-transparent mask, which implicitly means that the mask is moved around so that the full grating may be formed. It would then have been obvious to one skilled in the art to apply the teachings of Ohkura et al for the benefit of actually making the rotatable diffraction grating by the standard etching process.

With regard to claims 12-15, Ishikawa teaches that the diffraction grating (2) has blaze grooves as shown in Figure 6C with a blaze angle. This reference however does teach *explicitly* about the diffraction properties in terms of the claimed equations in relating to the angle of incident light, angle of diffraction light, the wavelength and the thickness of the grooves. However the claimed equations are simply the *standard* equations for describing the diffraction phenomenon of a diffraction blaze grating, they therefore can be deducted based on standard knowledge of the diffraction theory by one skilled in the art.

Response to Arguments

12. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.
October 24, 2002